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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,665	02/13/2007	Keiichi Aiso	295974US8X PCT	3127
22850	7590	12/08/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			CARTER, MICHAEL W	
			ART UNIT	PAPER NUMBER
			2828	
			NOTIFICATION DATE	DELIVERY MODE
			12/08/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/591,665	Applicant(s) AISO ET AL.	
	Examiner MICHAEL CARTER	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 11-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/4/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-10, in the reply filed on 9/4/2008 is acknowledged.
2. Claims 11-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group II, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 9/4/2008.

Information Disclosure Statement

3. The information disclosure statement filed 1/4/2007 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein which has been crossed out has not been considered.

Specification

4. The use of the trademarks "Corning" and "Flexcore" has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.
5. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claim 3** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 3 recites “a nonlinear coefficient ($\gamma_2 L_2$) / ($\gamma_1 L_1$) is larger than 1” which is unitless. Claim 3 later recites “an effective nonlinear coefficient is $\gamma_1 [1/W/m]$ ” which has units.

8. For purposes of the art rejection below, it is assumed that claim 3 should be “an effective nonlinear ~~coefficient~~ ratio” according to paragraph 74 of PG Pub 2007/0216993 for the instant application.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 1-2 and 4-5** are rejected under 35 U.S.C. 102(b) as being anticipated by Tamura et al. US Patent 5,617,434 (hereinafter referred to as Tamura).

11. **For claims 1 and 2**, Tamura teaches a fiber laser comprising in a resonator (figure 9): a normal dispersion optical fiber(label 12); an anomalous dispersion optical fiber (label 14 and column 6, line 6-17); a rare earth-doped optical fiber as a gain medium (erbium doped fiber); and a mode locking mechanism (column 11, lines 59-67),

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wherein at least said rare earth-doped optical fiber is included as said normal dispersion optical fiber (column 12, lines 10-11). For claim 1, Tamura further teaches a length of said rare earth-doped optical fiber is set shorter than that of said anomalous dispersion optical fiber (column 12 lines 6-11). For claim 2, Tamura further teaches an absolute value of the normal dispersion per unit length at central wavelength of the output light spectrum in said rare earth-doped fiber is larger than that of the anomalous dispersion per unit length of said anomalous dispersion optical fiber (column 12, lines 12-15).

12. **For claim 4**, Tamura teaches a total dispersion of the central wavelength of the output light spectrum in said resonator is a value within a range of -1 ps^2 to $+0.2 \text{ ps}^2$ (column 12, lines 15-17).

13. **For claim 5**, Tamura teaches a core portion of said rare earth-doped optical fiber is added at least with an erbium (Er) ion (column 12, line 10).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura.

16. **For claim 3**, Tamura is applied according to the rejection of claim 1 above.

17. Tamura does not teach at least said rare earth-doped optical fiber is included as said normal dispersion optical fiber, a nonlinear coefficient $(\gamma_{2L2})/(\gamma_{1L1})$ is larger than

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1 where, in said rare earth-doped fiber, a nonlinear coefficient is γ_1 [1/W/m], a length is L_1 [m], an effective nonlinear coefficient of other components of the resonator including the anomalous dispersion fiber is γ_2 [1/W/m], a length is L_2 [m].

18. However, Tamura does teach $L_2 > L_1$ (column 12 lines 6-11) which means γ_2/γ_1 does not limit the maximum upper value of the ratio. Further, it would have been obvious to one of ordinary skill in the art to determine the optimum and workable range for L_1 and L_2 which in turn inherently determines the optimum and workable ranges for the ratio.

19. **Claims 6-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura in view of Aiso US PG Pub 2003/0128421 (hereinafter referred to as Aiso).

20. **For claim 6**, Tamura does not teach a peak value of absorption coefficient in 1.53 μm band of said Er-doped optical fiber is set within a range of 10 dB/m to 35 dB/m.

21. However, Aiso teaches a erbium doped fiber with a peak value of absorption coefficient in 1.53 μm band of said Er-doped optical fiber set within a range of 10 dB/m to 35 dB/m (tables 1 and 2) in order to provide a fiber with sufficient gain (paragraphs 14-15).

22. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Aiso's absorption in order to provide a fiber with sufficient gain.

23. **For claim 7**, Tamura teaches a dispersion value in 1.55 μm band of said rare earth-doped optical fiber in said resonator is not less than 21 ps^2/Km (column 3, line 24 or column 12, lines 13-15).

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24. **For claim 8**, the combination does not explicitly teach ratio of an absorption peak value to a dispersion value $\alpha/D[\text{dB/ps}^2]$ is not less than 500, where a dispersion value in 1.55 μm band of said rare earth-doped optical fiber is $D[\text{ps}^2/\text{m}]$ and an absorption peak value in 1.53 μm band is a $[\text{dB/m}]$.

25. However, the combination does teach a range of suitable values for absorption, including 32 dB/m (Aiso, table 2), as well as a range for dispersion, including .03 ps^2/m (Tamura, column 3, line 24). The ratio of the cited values is not less than 500.

26. It would have been obvious to one of ordinary skill in the art to select a fiber with a ratio not less than 500 as a suitable fiber for Tamura's stretched pulse fiber laser.

27. **For claim 9**, Tamura further teaches said resonator comprises a pump light source (figure 9, label 16) for injecting a pump light into said resonator and an optical multiplexer (label 18) for multiplexing the pump light from said pump light source, and said resonator further comprises a rare earth-doped optical fiber (label 12), a single mode optical fiber(column 12, line 7), a polarization beam splitter (label 72), an optical isolator (label 46), and a polarization plate (labels 73a-b).

28. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura in view of Aiso and further in view of Hasegawa US PG Pub 2004/0105640 (hereinafter referred to as Hasegawa).

29. **For claim 10**, the previous combination teaches the pulsed fiber laser of claim 9.

30. The previous combination does not teach at least highly nonlinear fiber is connected with an output side of the fiber laser to generate a supercontinuum (SC) light.

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31. However, Hasegawa teaches using a nonlinear fiber connected with an output side of the fiber laser in order to generate a supercontinuum (SC) light (paragraph 5).

32. It would have been obvious to one of ordinary skill in the art at the time the invention was made to connect a nonlinear fiber with an output side of the fiber laser of the previous combination in order to generate a supercontinuum (SC) light.

Conclusion

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Carter whose telephone number is (571) 270-1872. The examiner can normally be reached on Monday-Friday, 7:00 a.m.-4:30 p.m., EST.

34. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

35. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/MC/

/Minsun Harvey/

Supervisory Patent Examiner, Art Unit 2828